



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/001,668	10/23/2001	Martin Gehrke	DFS-138-A	2075

7590 12/19/2002
YOUNG & BASILE, P.C.
Suite 624
3001 West Big Beaver Road
Troy, MI 48084-3107

EXAMINER

PATEL, ISHWARBHAI B

ART UNIT PAPER NUMBER

2827

DATE MAILED: 12/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/001,668

Applicant(s)

GEHRKE ET AL.

Examiner

Ishwar (I. B.) Patel

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7 and 8 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to because the figures are improperly cross hatched. All of the parts shown in section, and only those parts, must be cross hatched. The cross hatching patterns should be selected from those shown on page 600-81 of the MPEP based on the material of the part.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Reference number 20 not shown in figure 2.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schroeder et al., US Patent No. 4,513, 355, hereafter Schroeder, in view of Hamzehdoost et al. US Patent 5,689,091, hereafter Hamzehdoost.

Regarding claim 1 and 8, Schroeder discloses a printed circuit board, where

a first area carrying input circuit component of the printed circuit board is separated by a channel shaped recess from a surrounding second area, characterized in that the channel shaped recess terminates in the interior of the printed circuit board and is extended in the direction of the thickness of the printed circuit board as far as moisture-imperious barrier layer which underlies the first area of the printed circuit board (package 30 with recess around metallic die bond region 38, see figure 4A-B and 5, column 7 line 55-63), except

the channel shaped recess and the first area filled and enclosed by a cohesive moisture impermeable sealing material. However, encapsulating the component is known in the art for protecting the component from damage during handling and damage from the environment. Further, it may helpful in dissipating heat if the encapsulating material is thermally conductive. Hamzehdoost discloses such encapsulation of the component. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the assembly of

Schroeder with the encapsulation as taught by Hamzehdoost, in order to protect the component from environmental damage and avoid any damage during handling.

Regarding claims 2 and 3, Schroeder further disclose the moisture impermeable barrier is made of a metallic layer (metallic bond pad 38, see figure 5).

Regarding claim 4, though Schroeder does not explicitly disclose FR-4 material for the printed circuit board, use of FR-4 material is known in the art and it is economical to use FR-4 material for low cost circuit board. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the assembly of Schroeder with printed circuit board made of FR-4 material in order to have lower the cost. Further, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claim 5, the encapsulating material used for sealing is inherently a moisture impermeable material making the channel moisture impermeable.

Regarding claim 7, though Schroeder disclose plastic molding material, does not explicitly disclose the composition of the same. However, epoxy resins are known to be used as the encapsulating material for their availability and better adhesive and insulating property. Therefore, it would have been obvious to one having ordinary skill in

the art at the time the invention was made to provide the assembly of Schroeder with resin base encapsulating material in order to have reliable bonding and protection of the component.

Allowable Subject Matter

5. Claim 6 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

No prior art is found with the recess in a printed circuit board as claimed coated with a metal alloy.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Huber et al., Takeda, Thaler et al., Adachi et al., Degani et al., Chen et al., Mahulikar et al., Shikata et al., discloses the circuit board similar to applicant's claim invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (703) 305 2617. The examiner can normally be reached on M-F (6:30 - 4) First Friday Off.

Application/Control Number: 10/001,668

Page 6

Art Unit: 2827

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L Talbott can be reached on (703) 305 9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3431 for regular communications and (703) 305 7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

ibp
December 13, 2002

Albert W. Paladini 12-13-02
ALBERT W. PALADINI
PRIMARY EXAMINER